

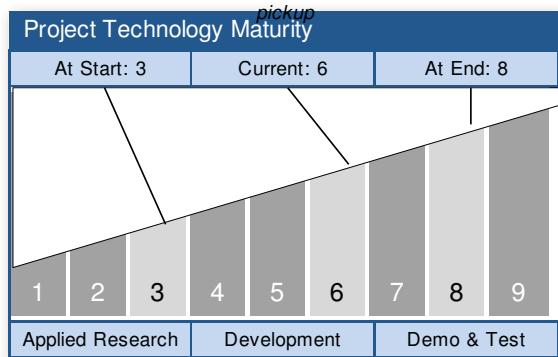
National Institute Of Occupational Safety And Health (NIOSH) Partnered Development Of Cryogenic Life Support Technologies Project

Center Independent Research & Developments: KSC IRAD Program
Office Of The Chief Technologist (OCT)

National Aeronautics and
Space Administration



2hr liquid air pack with quick fill and attitude independent pickup



Technology Area: Ground & Launch Systems Processing TA13
(Primary)
Human Health, Life Support & Habitation Systems
TA06 (Secondary)

ANTICIPATED BENEFITS

To NASA funded missions:

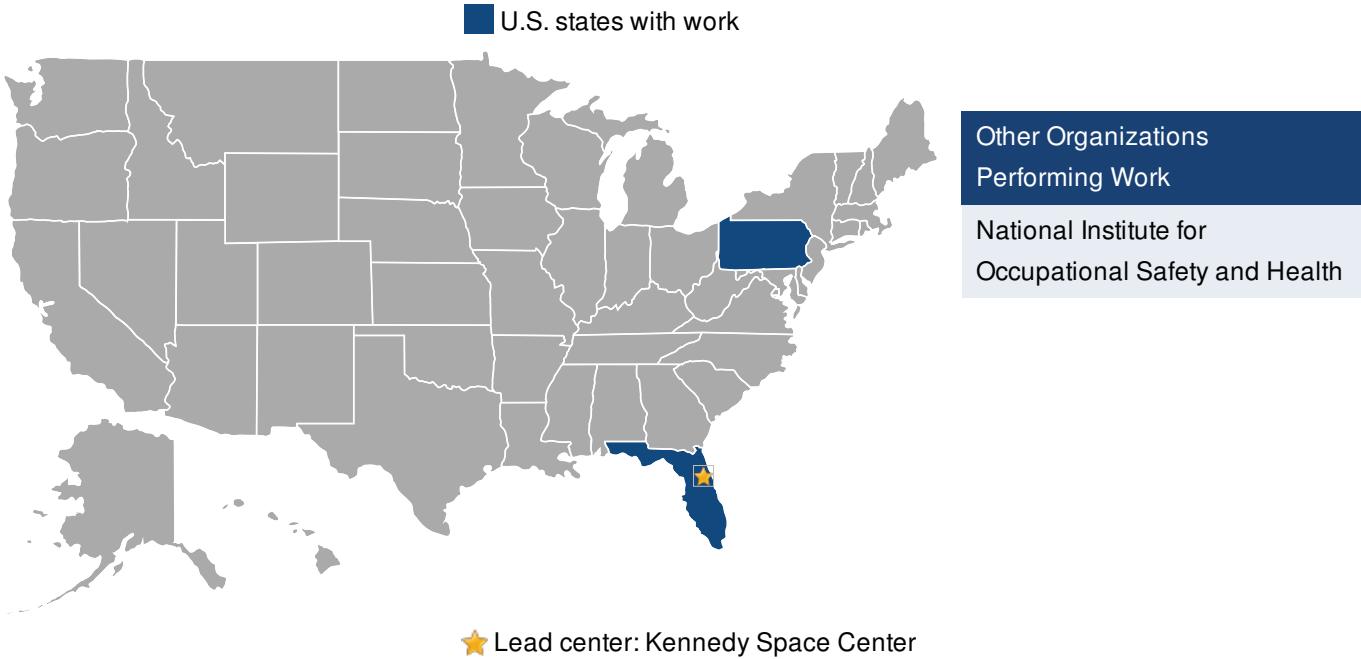
Improved Ground Operations safety. Reduced cost of operation due to indefinite storage technology. Next generation crew rescue packs.

To other government agencies:

This project benefits CDC/NIOSH/OMSHR directly. Potential benefits to DOD, DOE.

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Read more on the last page.



Contributing Partners

National Institute for Occupational Safety and Health

DETAILED DESCRIPTION

Partnering with National Institute of Occupational Safety and Health (NIOSH) to develop several cryogenically based life support technologies to be used in mine escape rescue scenarios. Technologies developed for mine rescue directly benefit future NASA rescue and ground operation missions. Projects Include: advanced liquid air SCBA packs, liquid air storage and fill stations, liquid oxygen rebreather technologies, liquid air based refuge chamber technologies.

MANAGEMENT

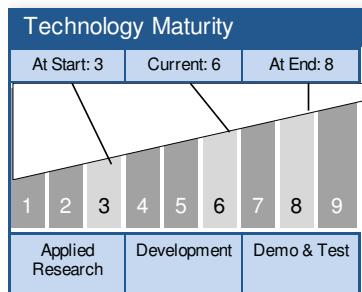
Program Director:
Rohan Fernando

Project Manager:
David Bush

Principal Investigator:
David Bush

TECHNOLOGY DETAILS

National Institute of
Occupational Safety and
Health (NIOSH) Partnered
Development of
Cryogenic Life Support
Technologies



TECHNOLOGY DESCRIPTION

Partnering with National Institute of Occupational Safety and Health (NIOSH) to develop several cryogenically based life support technologies to be used in mine escape rescue scenarios. Technologies developed for mine rescue directly benefit future NASA rescue and ground operation missions. Projects Include: advanced liquid air SCBA packs, liquid air storage and fill stations, liquid oxygen rebreather technologies, liquid air based refuge chamber technologies.

This technology is categorized as a hardware system for wearable applications

- Technology Area

- TA13 Ground & Launch Systems Processing (Primary)
- TA06 Human Health, Life Support & Habitation Systems (Secondary)

CAPABILITIES PROVIDED

Attitude independent liquid air applications, extended duration liquid air SCBA, indefinite liquid air storage, quick fill/breathe while filling technology for liquid air SCBA.

Potential applications include life support equipment for Fire/Rescue, Space, Military, Hazmat, & Nuclear Energy sectors.

IMAGE GALLERY



Cryogenic Air Storage and Fill Station



Cryogenic Breathing Apparatus

ANTICIPATED BENEFITS

To the commercial space industry: (CONT'D)

It is hoped that the technology developed under this program will be picked up by the commercial sector and eventually marketed to the space industry for use in space craft servicing and crew rescue. It is already being looked at to reduce costs for KSC liquid air storage and distribution.

To the nation:

If commercialized, there is a huge potential benefit to the Fire/Rescue community.